IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

IDENTITY SECURITY LLC, Plaintiff, v. APPLE INC., Defendant.	Civil Action No. 6:21-CV-460-ADA **JURY TRIAL DEMANDED**

DEFENDANT APPLE INC.'S OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Plaintiff Identity Security LLC ("Plaintiff") asserts four patents directed to 20-year-old technology against Defendant Apple Inc.'s ("Apple") revolutionary iPhone, iPad, and other products. D.I. 1 [Complaint]. Three of those patents have expired and the fourth is near its end, expiring on February 8, 2023. *See* D.I. 1 Exs. 1-4 ['497 patent; '008 patent; '895 patent; '948 patent].

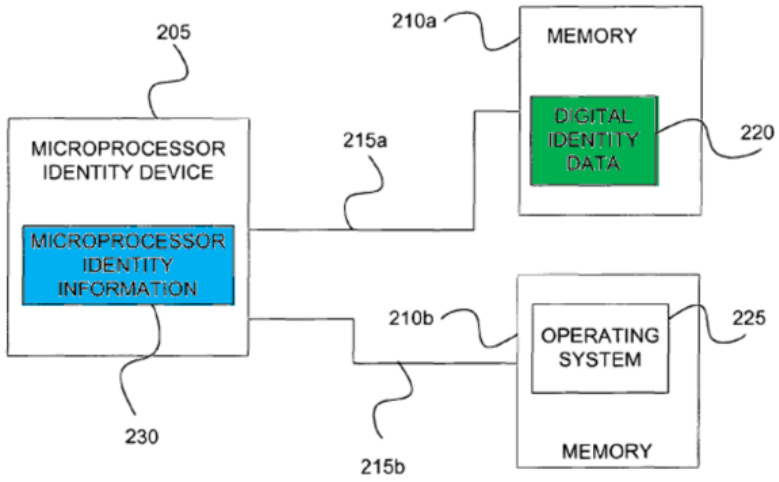
The asserted claims recite non-structural limitations directed to certain functions performed by an "algorithm." *Id.* But because the specification common to all four patents was filed so long ago, the patents fail to meet the disclosure standards adopted by the Federal Circuit over the ensuing years. Indeed, the common specification was first filed in September 2000—eight years before *Aristocrat Techs. v. Int'l. Game Tech.* held that a patent's specification must disclose a specific algorithm for performing a claimed function implemented on a microprocessor. 521 F.3d 1328, 1338 (Fed. Cir. 2008). Under the current controlling standards, the asserted claims are indefinite because the specification fails to disclose sufficient structural support for the claimed functions.

II. OVERVIEW OF THE PATENTS-IN-SUIT

Plaintiff alleges that Apple infringes four patents: U.S. Patent Nos. 7,493,497 (the "'497 patent"); 8,020,008 (the "'008 patent"); 8,489,895 (the "'895 patent"); and 9,507,948 (the "'948 patent") (collectively, the "Patents-in-Suit"). The four Patents-in-Suit share a common specification, purport to claim priority to the same provisional application, and are related to each other through a chain of continuations.[1]

[1] Because the Patents-in-Suit share a common specification, Apple cites primarily to the specification of the '497 patent (the earliest-filed of the four Patents-in-Suit).

The Patents-in-Suit are allegedly directed to ensuring the privacy and security of electronic communications between parties. '497 patent at 1:13-25. As shown below in Figure 2 of the '497 patent, the Patents-in-Suit generally describe a device that uses **microprocessor identity information** (colored below in blue)—an identifier that uniquely identifies a microprocessor or device—and **digital identity data** (colored below in green)—data that identifies the device's owner—"to create a unique digital identity." *Id*. at 1:29-33; 3:62-67.



Id. at Fig. 2 (excerpt, color added). The microprocessor identity information is etched onto the microprocessor "using any conventional etching method," (*id*. at 5:66-6:1), and, accordingly, does not change once it is assigned (Ex. A ['497 File History, Response, July 25, 2007], at p. 2-3 ("[T]he microprocessor identity does not change once as assigned, as the microprocessor identity is etched into the microprocessor.") (quotations omitted)).

The microprocessor identity information may include "a six (6) character code of the manufacturer (the company's stock ticker symbol, if a public company), a three character city airport code of the place of manufacture, a time (consisting of the month, day, year, hour, minute, second, millisecond) of manufacture, and extra bits for encryption purposes." '497 patent at 4:2-8.

The digital identity data identifying the device's owner may include "a name, a digital picture, an address, a date of birth, a social security number, a driver's license number, a digital photograph, a digital thumb print, a DNA code, one or more credit cards' information, one or more bank accounts' information, an incorporation name, a date and a place of incorporation, one or more corporate officers, one or more corporate partners, or one or more D.B.A. names." *Id*. at 4:27-35.

The asserted claims variously require binding the digital identity data to either the microprocessor identity, the microprocessor, or the device (depending on the claim) using an algorithm that uses the microprocessor identity information. *See* '497 patent, claim 1; '008 patent, claim 1; '895 patent, claim 5; '948 patent, claim 1.

The applicant originally added the binding limitation during prosecution of the '497 patent in response to the examiner's rejection of the claims over the prior art. Ex. B ['497 File History, Amendment, May 9, 2005], at p. 4; Ex. C ['497 File History, Amendment, September 21, 2005], at p. 2. In particular, the applicant initially sought to overcome a rejection by amending the claims to require that the digital identity data is "bound" to the microprocessor identity. Ex. B ['497 File History, Amendment, May 9, 2005], at p. 4. As the applicant explained:

> The digital identity data is bound to the microprocessor identity. Said another way, the microprocessor identity is associated with the digital identity data. As described in the specification and recited in the dependent claims, the microprocessor identity and the digital identity may be ***bound using software within the device, using operating software within the device, or using a secure operating system within the device***.

Ex. B ['497 File History, Amendment, May 9, 2005], at p. 12.[2]

When that amendment and explanation proved unsuccessful in overcoming the prior art, the applicant again amended the claims to require that the binding is accomplished "by encrypting

[2] All emphasis is added unless otherwise stated.

the digital identity data ***using an algorithm*** that uses the microprocessor identity." Ex. C ['497 File History, Amendment, September 21, 2005], at p. 2. The applicant then distinguished the prior art on the basis that (according to the applicant) it did not "teach or suggest encrypting digital identity data associated with a user of the digital identity device using the microprocessor ID." '497 File History, Amendment, September 21, 2005, at p. 7.[3]

III. DISPUTED TERMS AND CONSTRUCTIONS

A. The Algorithm Terms

Claim Term	Plaintiff's Proposed Construction	Apple's Proposed Construction
"the digital identity data is bound to the microprocessor identity by encrypting the digital identity data using an algorithm that uses the microprocessor identity" ('497 patent, claim 1)	This phrase is not subject to either paragraph 2 or 6 of 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	§ 112, ¶ 6 applies. **Function**: "binding the digital identity data to the microprocessor identity by encrypting the digital identity data using the microprocessor identity" **Structure**: microprocessor, e.g., Fig. 4, Fig. 6 (405, 605); no algorithm disclosed; indefinite. Alternatively, to the extent §112, ¶ 6 does not apply: indefinite.
"the digital identity data is bound to the microprocessor identity device by encoding, using the microprocessor, the digital identity data using an algorithm that uses the	This phrase is not subject to either paragraph 2 or 6 of 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	§ 112, ¶ 6 applies. **Function**: "binding the digital identity data to the microprocessor identity device by encoding the digital identity

[3] The other three asserted claims include similar limitations added to the claims via various amendments. *See* Ex. D ['008 File History, Amendment, December 16, 2009], at p. 3; Ex. E ['008 File History, Amendment, September 23, 2010], at p. 2; Ex. F ['895 File History, Preliminary Amendment, August 11, 2011], at p. 3; Ex. G ['895 File History, Amendment, July 17, 2012], at p. 4; Ex. H ['895 File History, Amendment, October 24, 2012], at p. 4; Ex. I ['948 File History, Preliminary Amendment, June 14, 2013], at p. 3.

microprocessor identity information" ('008 patent, claim 1)		data using the microprocessor identity information" **Structure**: microprocessor, e.g., Fig. 4, Fig. 6 (405, 605); no algorithm disclosed; indefinite. Alternatively, to the extent §112, ¶ 6 does not apply: indefinite.
"the digital identity data is bound to the microprocessor identity device using an encryption algorithm and the microprocessor identity information" ('895 patent, claim 5)	This phrase is not subject to either paragraph 2 or 6 of 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	§ 112, ¶ 6 applies. **Function**: "binding the digital identity data to the microprocessor identity device by encrypting the digital identity data using the microprocessor identity information" **Structure**: microprocessor, e.g., Fig. 4, Fig. 6 (405, 605); no algorithm disclosed; indefinite. Alternatively, to the extent §112, ¶ 6 does not apply: indefinite.
"the digital identity data is bound to the microprocessor by encrypting, using the microprocessor, the digital identity data using an algorithm that uses the microprocessor identity information" ('948 patent, claim 1)	This phrase is not subject to either paragraph 2 or 6 of 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	§ 112, ¶ 6 applies. **Function**: "binding the digital identity data to the microprocessor by encrypting the digital identity data using the microprocessor identity information" **Structure**: microprocessor, e.g., Fig. 4, Fig. 6 (405, 605); no algorithm disclosed; indefinite. Alternatively, to the extent §112, ¶ 6 does not apply: indefinite.

Each of the asserted claims recites an "algorithm" for performing a particular function (the "algorithm terms"). The parties have three primary disputes with respect to the algorithm terms. First, the parties dispute whether the algorithm terms should be construed under § 112, ¶ 6. Second, if the terms are subject to § 112, ¶ 6 (as Apple contends), the parties dispute whether the claims are indefinite because the specification fails to disclose sufficient structure for performing the claimed functions. Third, even if the claims are not construed according to § 112, ¶ 6, the parties dispute whether the claims are indefinite because they fail to inform one of ordinary skill in the art about the scope of the claim terms with reasonable certainty.

The claims, specification, prosecution histories, contemporaneous technical sources, and the understanding of persons of ordinary skill in the art at the time of the alleged invention confirm that the algorithm terms should be construed under § 112, ¶ 6. When properly construed under § 112, ¶ 6, the claims are indefinite because the specification fails to disclose adequate structure for performing the claimed functions. Alternatively, even if § 112, ¶ 6 does not apply, the claims, read in light of the specification and the prosecution history, are indefinite under § 112, ¶ 2 because they fail to inform one of ordinary skill in the art about the scope of the alleged invention with "reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

1. The algorithm terms should be construed according to § 112, ¶ 6.

Although the algorithm terms do not recite the word "means," § 112, ¶ 6 nevertheless applies where "the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (quotations omitted). Here, the claims, specification, prosecution history, and understanding of persons of ordinary skill in the art confirm that the

algorithm terms should be construed under § 112, ¶ 6 because they "recite[] function without reciting sufficient structure for performing that function." *Id.*

First, the claims simply recite a function performed by an "algorithm." In particular, the claims require an "algorithm" that performs the function of binding "digital identity data" to either the "microprocessor identity," the "microprocessor identity device," or the "microprocessor,"[4] by encrypting/encryption or encoding the "digital identity data" using either a "microprocessor identity" or "microprocessor identity information"[5] as an input to that algorithm.

An "algorithm" is not structure. It is simply an abstract construct that refers to a computer program or a procedure implemented in computer logic or code. Declaration of Douglas C. Schmidt] ("Schmidt Decl.") ¶¶ 35-36. For example, technical dictionaries define an "algorithm" as "a procedure made up of mathematical and/or logic operations that achieves a desired result when followed" or "a planned set of instructions or steps in a computer program that is designed to solve a particular problem." *A Dictionary of Minicomputing and Microcomputing* (1982), at 5; *The Penguin Dictionary of Electronics* (Third Edition 1998), at 8. *See also Barron's Business Guides Dictionary of Computer Terms* (Sixth Edition 1998), at 6 ("A computer program is an algorithm written in a language that a computer can understand, but the same algorithm could be written in several different languages."); *Data and Telecommunications Dictionary* (1999), at 24; *The PC User's Pocket Dictionary* (1994), at 11; *A Dictionary of Computing* (Fourth Edition 1997),

[4] Claim 1 of the '497 patent recites binding the "digital identity data" to the "microprocessor identity." Claim 1 of the '008 patent and claim 5 of the '895 patent recite binding the "digital identity data" to the "microprocessor identity device." And claim 1 of the '948 patent recites binding the "digital identity data" to the "microprocessor."

[5] Claim 1 of the '497 patent recites using a "microprocessor identity." Claim 1 of the '008 patent, claim 5 of the '895 patent, and claim 1 of the '948 patent recite using "microprocessor identity information."

at 13; *Sams Computer Dictionary* (Fourth Edition 1985), at 11; *The New American Computer Dictionary* (1983), at 13. There is thus no structural distinction between claims that recite an "algorithm" for performing the recited functions and claims that recite a "computer program," "logic," or "code" for performing those functions.

Courts have routinely determined that such terms are subject to § 112, ¶ 6. In *Egenera, Inc. v. Cisco Sys., Inc.*, for example, the Federal Circuit found that § 112, ¶ 6 applied to the phrase "***logic*** to modify said received messages to transmit said modified messages to the external communication network and to the external storage network." *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1375 (Fed. Cir. 2020) ("[T]he claims and specification provide no structural limitation to the 'inputs, outputs, connections, and operation' of the claimed 'logic to modify'… As used, logic is no more than a black box recitation of structure that is simply a generic substitute for means.") (internal citations omitted). Similarly, an "algorithm" is simply a "procedure made up of . . . logic operations . . . ." and, accordingly, fails to recite sufficient structure. *See A Dictionary of Minicomputing and Microcomputing* (1982), at 5; Schmidt Decl. ¶¶ 35-36.

This Court has reached the same conclusion for similar terms. For example, this Court found that § 112, ¶ 6 applied to the term "at least one memory and the ***computer program code*** are configured, with the at least one processor, to cause the apparatus to at least: detect that an application is being started on the apparatus; in response to the application being started on the apparatus, turn on a continuous wave Doppler radar at the apparatus." *WSOU Investments, LLC v. Google LLC*, 6:20-cv-00571-ADA, Claim Construction Order at 1-2 (Dkt. 46) (June 2, 2021) (Albright, J.). Similarly, in the context of the Patents-in-Suit, an "algorithm" is just a computer program. *See A Dictionary of Minicomputing and Microcomputing* (1982), at 5 ("***algorithm***: a planned set of ***instructions or steps in a computer program*** that is designed to solve a particular

problem."); *Barron's Business Guides Dictionary of Computer Terms* (Sixth Edition 1998), at 6 ("A ***computer program is an algorithm*** written in a language that a computer can understand, but the same algorithm could be written in several different languages.").

This Court also applied § 112, ¶ 6 to several terms reciting "code" to perform a function. *Dyfan, LLC v. Target Corp*, No. W-19-CV-00179-ADA, 2020 WL 8617821, at *6 (W.D. Tex. Nov. 24, 2020) (Albright, J.) (presumption against § 112, ¶ 6 rebutted with use of "code" terms). In *Dyfan*, this Court concluded that "the claim term only requires that the code causes the second visual information to be output. As such, the code is defined only by the function that it performs." (citing *Cypress Lake Software, Inc. v. Samsung Elec. Am. Inc.*, 382 F. Supp. 3d 586, 615 (E.D. Tex. May 10, 2019)). The Court was also unpersuaded by the recitation of other components in the claim terms, such as "mobile devices," "computer code," "application," and "server," because "none of these components constitute sufficient structure to perform the recited function." *Id*.

Similarly, in *Joao Control & Monitoring Sys., LLC v. Protect Am., Inc.*, this Court held that § 112, ¶ 6 applied to "a ***system*** for detecting a failure in the at least one of a premises system, a premises equipment system, a premises component… wherein the detecting system provides information regarding the failure." *Joao Control & Monitoring Sys., LLC v. Protect Am., Inc.*, No. 1-14-CV-134-LY, 2015 WL 4937464, at *5 (W.D. Tex. Aug. 18, 2015) (Yeakel, J.) ("The court finds that 'system,' as used in the claim… is simply a substitute for the term 'means for.'… The court further finds no recitation of sufficient structure within the claim capable of performing the function of 'detecting a failure' in the system or equipment and 'provid[ing] information regarding the failure.' Nor does the specification shed any light on the structure of the claim language.").

Courts in other districts have similarly applied § 112, ¶ 6 to terms that are analogous to "algorithm." For example, in *Cypress Lake Software, Inc. v. Samsung Elecs. Am., Inc.*, the Eastern District of Texas found that § 112, ¶ 6 applied to the term "***code*** for sending, in response to detecting the user input, navigation information to navigate to the second visual component" and other similar "code for" terms. *Cypress Lake Software, Inc. v. Samsung Elecs. Am., Inc.*, 382 F. Supp. 3d 586, 615 (E.D. Tex. 2019), *reconsideration denied*, No. 6:18-CV-30-JDK, 2019 WL 4935280 (E.D. Tex. Aug. 23, 2019). In *Cypress*, the court determined that the claim term "code for" was "defined only by the function that it performs" even though the claim further specified various inputs that the code acted upon and outputs that the code provided *Id*. In particular, the claim term required "detecting [a] user input" and, "in response" to detecting that user input, "sending . . . navigation information" to another component—yet recitation of those inputs and outputs failed to provide sufficient structure for performing the claimed function. *Id*. ("[I]n these claims, the term 'code for' is defined only by the function that it performs, specifically: [] 'code for sending, in response to detecting the user input, navigation information to navigate to the second visual component'… The surrounding claim language also does not identify any specific structure of 'code' to perform the recited function…"); *see also Cypress Lake Software, Inc. v. ZTE (USA) Inc.*, No. 6:17-CV-00300-RWS, 2018 WL 4035968, at *9 (E.D. Tex. Aug. 23, 2018) (holding that the same "code" terms should be construed under § 112, ¶ 6). The Court thus found that nothing in the claim provided any specific structure for the "code" used for performing the claimed function. *Id*.

Although the terms at issue in those cases recited "logic," "computer program code," "system," and "code," the same reasoning applies equally to the algorithm terms here. The algorithm terms at issue here recite no more structure than if they were written as, for example,

"means for binding the digital identity data to the microprocessor identity by encrypting the digital identity data using the microprocessor identity."

In each asserted claim, the algorithm is defined solely by the inputs to that algorithm (*i.e.*, (1) "digital identity data" and (2) "microprocessor identity" or "microprocessor identify information") and the function that the algorithm performs (*i.e.*, binding the digital identity data by encrypting/encryption/encoding to either the microprocessor identity, the microprocessor identity device, or the microprocessor). *See* '497 patent, claim 1; '008 patent, claim 1; '895 patent, claim 5; '948 patent, claim 1. And the recitation of generic components like a "microprocessor" or "memory" adds no structure for performing the claimed functions beyond the "algorithm" term itself. *See Dyfan,* 2020 WL 8617821, at *6 (finding that recitation of a "mobile device" and, by implication, a "processor," fails to provide sufficient structure beyond the claims' recitation of "code"). Accordingly, the claims compel that the algorithm terms should be construed under § 112, ¶ 6. *Egenera, Inc.*, 972 F.3d at 1374; *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 applies if "the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.").

Second, the specification confirms that the claim term "algorithm" is merely a placeholder for the common § 112, ¶ 6 language "means for." In particular, the specification states:

> According to one aspect of the invention, a digital identity device for identifying individuals includes a microprocessor identity device, a digital identity, and ***means for binding the microprocessor identity device to the digital identity***.

'497 patent at 1:34-37. The specification thus recites the same function as the claims—binding the digital identity to the microprocessor identity device—except that it replaces "algorithm" with "means for." Accordingly, the specific facts in this case show that the inventor used the term "algorithm" in the claims synonymously with the typical § 112, ¶ 6 indicator "means for."

When the specification uses parallel language that essentially equates claim language with the § 112, ¶ 6 indicator "means for," the claim language should be construed under §112, ¶ 6. *Cypress Lake Software, Inc. v. Samsung Elecs. Am., Inc.* compels that conclusion here. As explained above, in that case the court held that § 112, ¶ 6 applied to the term "code for sending, in response to detecting the user input, navigation information to navigate to the second visual component" (and other similar "code for" terms). *Cypress Lake Software, Inc.*, 382 F. Supp. 3d at 615-16. As part of its reasoning, the court observed that the specification equated the claim phrase "code for" with the § 112, ¶ 6 indicator "means for" because the specification used the phrase "means for" to describe performance of the same function recited in the claim. *Id.* ("[T]he specification ***equates*** 'code for' and 'means for' by using the same functional language as in the claims except that the specification recites 'means for' performing those functions, whereas the claims recite 'code for' doing so… By using this ***parallel language***, a person of ordinary skill in the art would understand that the [patent-in-suit] uses the terms 'code for' and 'means for' as synonyms.") *See also Cypress Lake Software, Inc.*, 2018 WL 4035968, at *9 (same). In this case, if the claims swapped "means" in place of "algorithm"—as the inventors clearly did in the specification—there would be no question that the claims merely recite a function and should, accordingly, be construed under § 112, ¶ 6. *See* Appendix A (showing claim limitations with "means" swapped for "an algorithm" or "algorithm").

Third, the prosecution history confirms the interchangeability of the claimed "algorithm" for the § 112, ¶ 6 indicator "means for" and the non-structural nature of the term "algorithm." For example, originally filed claim 1 of the '497 patent recited "means for binding the microprocessor identity device to the digital identity." Ex. J ['497 File History, Claims, September 8, 2000], at p. 23 (originally filed claim 1). Claim 1 was then twice amended, first to replace the "means for

binding" limitation with the functional language "wherein the digital identity data is bound to the microprocessor identity," and second to add the algorithm language that appears in the issued claim ("by encrypting the digital identity data ***using an algorithm*** that uses the microprocessor identity"). Ex. B ['497 File History, Claims, May 9, 2005], at p. 4; Ex. C ['497 File History, Claims, September 21, 2005], at p. 2.

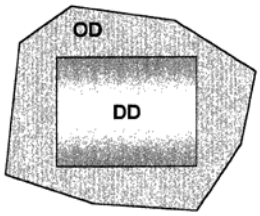
The evolution of the claim through prosecution—as shown below—thus confirms that the applicants used the term "algorithm" as a synonymous substitute for the common § 112, ¶ 6 indicator "means for":

Originally Filed Claim 1	**First Amendment**	**Amendment Resulting In Issued Claim**
"means for binding the microprocessor identity device to the digital identity" Ex. J ['497 File History, Claims, September 8, 2000], at p. 23.	"~~means for binding the microprocessor identity device to the digital identity~~ wherein the digital identity data is bound to the microprocessor identity" Ex. B ['497 File History, Claims, May 9, 2005], at p. 4.	"wherein the digital identity data is bound to the microprocessor identity by encrypting the digital identity data using an algorithm that uses the microprocessor identity" Ex. C ['497 File History, Claims, September 21, 2005], at p. 2.

The '497 patent's prosecution history also uses similar non-structural language to describe the binding functionality that the claims purport to perform using an "algorithm." For example, the '497 patent's prosecution history describes the binding function as simply "associat[ing]" the microprocessor identity with the digital identity data. Ex. B ['497 File History, Amendment, May 9, 2005], at p. 12 ("Said another way, the microprocessor identity is associated with the digital identity data."). The applicant similarly explained that the binding function is performed by "software within the device," "operating software within the device," or a "secure operating system within the device." *Id.*

The prosecution history thus equates "algorithm" with "means for," "software," "operating software," or an "operating system"—terms that are synonyms for, or structurally equivalent to, a "computer program" or computer "code"—terms that have been found to require construction under § 112, ¶ 6. *See supra* at pp. 8-11 (citing cases).

The provisional application to which each of the Patents-in-Suit purports to claim priority similarly demonstrates the non-structural nature of the claimed "algorithm." In particular, the provisional application describes the binding functionality merely by overlaying two geometric shapes to convey the general notion of computer software that binds information:



This bottom illustration indicates soft-binding. The irregularly shaped polygon indicates software that contains the identity of another entity or license.

Ex. K [Provisional Application No. 60/179,989], Fig. 3 (excerpt). The algorithm terms, like that conceptual figure, convey no structure for performing the recited functions.

Fourth, Apple's expert, Dr. Douglas C. Schmidt, a Professor of Engineering at Vanderbilt University with over 30 years of experience in electrical engineering, computer science, and computer and cyber security, explains that the term "algorithm" is just a placeholder for computer code without signaling any particular structure. *See* Schmidt Decl. ¶¶ 35-37. Specifically, Dr. Schmidt explains that a person of ordinary skill in the art at the time would understand that "binding the digital identity data by encrypting/encryption/encoding describes the function that the algorithm performs" and "does not describe any particular structure for performing that function." Schmidt Decl. ¶ 39-42. At best, the claims describe the inputs to the algorithm and the required function, but fails to specify any structure for performing the claimed function using those inputs.

Schmidt Decl. ¶¶ 33-42. That cannot suffice as "sufficient structure," and, accordingly, § 112, ¶ 6 should apply. *Williamson*, 792 F.3d at 1349; *Egenera, Inc.*, 972 F.3d at 1374.

2. The claims are indefinite because the specification fails to provide any algorithmic structure.

Because the algorithm terms are subject to § 112, ¶ 6, the specification must disclose sufficient structure for performing the claimed functions. *Williamson*, 792 F.3d at 1351-52. Where—as here—the claims recite computer-implemented functionality, the specification must disclose a specific algorithm for performing the claimed function. *Aristocrat Techs. v. Int'l. Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). An algorithm may be expressed in any understandable terms, including as a mathematical formula, in prose, or as a flow chart. *See, e.g.*, *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008). If the specification fails to disclose a specific algorithm corresponding to the claimed function, the claim is indefinite under 35 U.S.C. § 112, ¶ 2. *Aristocrat*, 521 F.3d at 1338; *see also Dyfan*, 2020 WL 8617821, at *7 ("[B]ecause the specification does not disclose an algorithm for the claimed special-purpose computer-implemented function, the claim is indefinite for failing to disclose corresponding structure.") (citing *Function Media, L.L.C. v. Google, Inc.*, 708 F.3d 1310, 1332 (Fed. Cir. 2013)).[6]

The specification simply describes the computer-implemented functions in general terms without any indication of ***how*** to program a computer to perform those functions. *Aristocrat*, 521 F.3d at 1334; *Finisar*, 523 F.3d at 1340 (failing to find an algorithm where the specification

[6] A "***narrow*** exception" to the rule—the so-called "*Katz* exception"—exists "in the ***rare*** circumstances where ***any general-purpose computer without any special programming*** can perform the function that an algorithm need not be disclosed." *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1364–65 (Fed. Cir. 2012) (citing *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011)). But in most cases, "[i]f special programming is required for a general-purpose computer to perform the corresponding claimed function, then the default rule requiring disclosure of an algorithm applies." *Ergo Licensing*, 673 F.3d at 1365. As Dr. Schmidt explains in his declaration, the claims recite functions that cannot be performed by "any" general purpose computer "without any" special programing. Schmidt Decl. ¶¶ 51-53.

"provides nothing more than a restatement of the function, as recited in the claim"). Instead of disclosing a specific algorithm, the specification merely states that "the operating system 225 binds the digital identity data 220 to the microprocessor identity device 205 by encoding the digital identity data 220" and that the "digital identity data 220 is encoded by an algorithm that uses the microprocessor identity information 230." '497 patent at 4:37-42; *see also id.* at 4:59-60 ("The microprocessor identity information 230 is bound to the digital identity data 220 by the operating system 225.").

The sole figure that mentions the binding function similarly fails to disclose any specific algorithm and instead discloses only a black box:

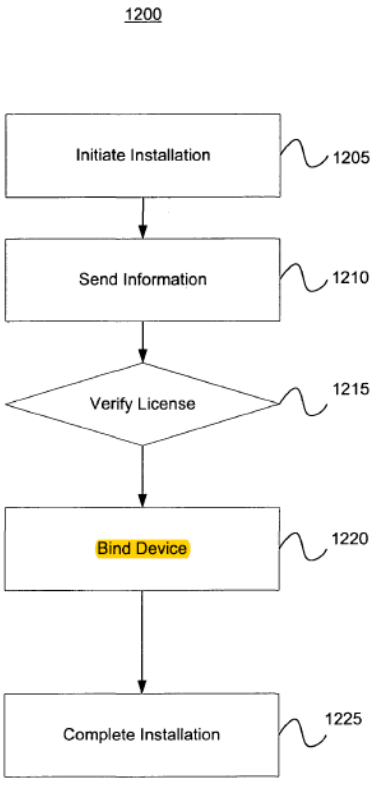


Fig. 12

'497 patent at Fig. 12. And as Dr. Schmidt explains, the specification only discloses the result of an algorithm—the binding—instead of ***how*** that binding can be achieved. Schmidt Decl. ¶¶ 48-

50. Nothing in the patent discloses how the algorithm operates, what steps it includes, or how to achieve its intended outcome of binding. Without such guidance, a POSITA would not know which of a wide range of potential algorithms could be used, whether it is in software or hardware or some combination, how any such algorithm would operate on its inputs, or even whether it achieves the claimed binding. *Id*. Indeed, the patent does not include a single example of the claimed algorithm. *Id*.

Accordingly, because the specification fails to disclose a specific algorithm that can perform the claimed functions, the algorithm terms render the claims indefinite.

3. To the extent § 112, ¶ 6 does not apply, the algorithm terms still render the claims indefinite.

To the extent the Court determines that § 112, ¶ 6 does not apply, the algorithm terms still render the claims indefinite under §112, ¶ 2. The claims, read in light of the specification and the prosecution history, fail to inform one of ordinary skill in the art about the scope of the alleged invention with "reasonable certainty." *Nautilus, Inc.*, 572 U.S. at 901.

As explained above, the claims require binding "digital identity data" to a microprocessor identity, microprocessor identity device, or microprocessor "using" an algorithm that uses the microprocessor identity or microprocessor identity information. *See* '497 patent, claim 1; '008 patent, claim 1; '895 patent, claim 5; '948 patent, claim 1. But other than to recite the vague notion of encryption or encoding—themselves describing only functionality and not structure—neither the claims nor the specification explains what use of the microprocessor identity (or microprocessor identity information) is encompassed by the claims, particularly in light of the patents' failure to disclose a specific algorithm.

"T]he claims, when read in light of the specification and the prosecution history, must provide ***objective boundaries*** for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*,

766 F.3d 1364, 1371 (Fed. Cir. 2014). Based on the intrinsic record it remains a mystery as to what algorithms for performing the claimed functions are encompassed by the claims. For example, if an inventor developed a brand new algorithm that could perform the claimed functions, would the asserted claims preempt that new invention? Because the specification provides ***no*** disclosure of the claimed algorithm, persons of skill in the art and, indeed, the public, are left guessing as to whether any particular algorithm that can perform the recited functions would satisfy the claims. When the specification fails to provide a "meaningful and functional explanation of the characteristics of [a claim term]," that term is indefinite. *IQASR LLC v. Wendt Corp.*, 825 F. App'x at 906 (Fed. Cir. 2020). The complete failure of the Patents-in-Suit to disclose an algorithm for performing the claimed functions leaves a skilled artisan unable to determine the scope of the claims. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1363-64 (Fed. Cir. 2018) (holding a term indefinite because the specification contained neither an explanation nor a specific example of the term). *See also* Schmidt Decl. ¶¶ 54-55.

Accordingly, to the extent the Court does not construe the algorithm terms under § 112, ¶ 6, the claims are still indefinite under §112, ¶ 2.

B. The Microprocessor Identity Terms

Claim Term	Identity Security's Proposed Construction	Apple's Proposed Construction
"microprocessor identity that uniquely identifies the microprocessor" ('497 patent, claim 1)	This phrase is not indefinite under 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	identifier that uniquely identifies the microprocessor and that does not change once assigned
"microprocessor identity information uniquely identifies the microprocessor" ('948 patent, claim 1)	This phrase is not indefinite under 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	identifier that uniquely identifies the microprocessor and that does not change once assigned

"microprocessor identity information that uniquely identifies the microprocessor identity device" ('008 patent, claim 1; '895 patent, claim 5)	This phrase is not indefinite under 35 U.S.C. § 112. This phrase does not require construction beyond its plain and ordinary meaning.	identifier that uniquely identifies the microprocessor identity device and that does not change once assigned

There appears to be no dispute that claim 1 of the '497 patent and claim 1 of the '948 patent require a "microprocessor identity" or "microprocessor identity information," respectively, that uniquely identifies the "microprocessor." *Compare* Plaintiff's Proposed Claim Constructions at 2 (identifying plain and ordinary meaning for the "microprocessor identity" terms) *with* Apple's Preliminary Proposed Constructions at 2 (proposing construction that "uniquely identifies the microprocessor"). Similarly, there appears to be no dispute that claim 1 of the '008 patent and claim 5 of the '895 patent require "microprocessor identity information" that uniquely identifies the "microprocessor identity device." *Compare* Plaintiff's Proposed Claim Constructions at 2 (identifying plain and ordinary meaning for the "microprocessor identity" terms) *with* Apple's Preliminary Proposed Constructions at 3 (proposing construction that "uniquely identifies the microprocessor identity device"). The parties' dispute centers on whether the unique identifier recited in each claim "does not change once assigned." The claims, specification, and, in particular, the prosecution history confirm that the unique identifier recited in each claim does not change once assigned.

First, the claims confirm that the "microprocessor identity" and the "microprocessor identity information" must be a static value that does not change once assigned. For example, all of the claims require that the microprocessor identity and microprocessor identity information "uniquely identifies" the microprocessor or the microprocessor identity device (depending on the particular claim). '497 patent at 11:63-64 ("a microprocessor comprising a microprocessor

identity that uniquely identifies the microprocessor); '008 patent at 12:7-8 ("microprocessor identity information that uniquely identifies the microprocessor identity device"); '895 patent at 12:44-45 (same); '948 patent at 12:30-31 ("a microprocessor, wherein microprocessor identity information uniquely identifies the microprocessor"). If the microprocessor identity or microprocessor identity information could change after it has been assigned, it may no longer uniquely identify the microprocessor/microprocessor identity device because it might change to the same value already assigned to another microprocessor/microprocessor identity device. Accordingly, the claims support that the "microprocessor identity" or "microprocessor identity information" does not change once it is assigned (as Apple's proposed construction recognizes).

Second, the specification also supports Apple's proposed construction by describing the requirement of unique identification. *See, e.g.*, '497 patent at 3:67-4:4 ("The microprocessor identity information 230 distinguishes the microprocessor identity device 205 from other microprocessors in the world. The microprocessor identity information 230 is ***unique*** to the microprocessor identity device 205."). Specifically, the specification provides multiple descriptions of identity information that confirm the static nature of the identifier. For example, the specification repeatedly refers to the microprocessor identity information being ***etched*** onto the microprocessor or the memory. '497 patent at 5:66-6:3 ("The microprocessor identity information 230 is etched onto the microprocessor component 405 using any conventional etching method. The microprocessor identity information 230 is etched at the time the microprocessor component 405 is etched."), 6:16-18 ("The microprocessor identity information 230 is etched onto the memory 510 using any commercially available PROM programming device."),[7] 6:31-35 ("The

[7] "PROM" refers to "Programmable Read-Only Memory," which is a type of memory that is not erasable once programmed. Schmidt Decl. ¶ 59; *see also* '497 patent at 6:12-15 ("The memory

microprocessor identity information 230 is etched onto the memory 610 using any standard means for programming. The microprocessor identity information 230 is etched at the time of manufacturing of the microprocessor component 605."). Etching is a one-way process; a microprocessor or memory cannot be un-etched. Schmidt Decl. ¶ 60-61. As a consequence of etching, the microprocessor identity information cannot be subsequently changed. *Id.*

In contrast, nothing in the specification (or the claims) implicitly or explicitly supports an interpretation that would permit the microprocessor identity or microprocessor identity information to change once assigned.

Third, the applicant made clear in the prosecution histories of the Patents-in-Suit that the microprocessor identity does not change once assigned. For example, in response to examiner rejections, the applicant repeatedly represented to the Patent Office that the claimed microprocessor identity does not change once it has been assigned. Ex. A ['497 File History, Response, July 25, 2007], at p. 2-3 ("Accordingly, the microprocessor identity uniquely identifies the specific microprocessor. Further ***the microprocessor identity does not change once as assigned***, as 'the microprocessor identity is etched into the microprocessor…. From the above, it is clear that the machine id of Cooper: (i) is not constant (*i.e.*, it changes each time a new machine id is required). . . Accordingly, the machine id in Cooper is not equivalent to the microprocessor identity recited in the claims.)" (emphasis in original and added)); Ex. L ['497 File History, Response, April 2, 2008], at p. 2 ("the microprocessor identity uniquely identifies the specific microprocessor. Further, ***the microprocessor identity does not change once as assigned***, as 'the microprocessor identity is etched into the microprocessor.'" (emphasis in original and added)).

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510 is programmable, ***non-erasable***, and read-only. The memory 510 is any commercially available memory, such as Programmable Read-Only Memory (PROM).")

In particular, the examiner rejected claim 1 because two prior art references—"Cooper" and "Ward"—rendered the claim obvious. Ex. M ['497 File History, Final Rejection, May 30, 2008], at p. 3-4. The examiner explained that Cooper discloses, among other limitations of claim 1, a "[m]icroprocessor identity that is encrypted . . . by the digital identity data using an algorithm that uses a random number . . . ." *Id.* at 4. The examiner further explained that Ward discloses an "identifier (serial number)" that is "etched" into a computer component. *Id*. The examiner concluded that a person of ordinary skill in the art would have combined Ward's teaching of a serial number that is etched into a computer component with Cooper's teaching of encrypting that identifier using an algorithm. *Id*.

In response to the examiner's rejection, the applicant expressly argued that the "claims ***require*** that the microprocessor identity for the microprocessor ***does not change*** . . . ." Ex. N ['497 File History, Response, August 22, 2008], at p. 6-7. Based on that representation regarding the scope of the claim, the applicant attempted to distinguish the prior art by arguing that Cooper discloses a "machine Id" that can change over time and, accordingly, is not combinable with Ward's teaching of a serial number that is etched into a computer component such that it cannot change:

> Specifically, ***the pending claims require that the microprocessor identity for the microprocessor does not change*** (as it is 'etched into the microprocessor'). In contrast, a machine Id is derived each time trail software is to be provided by a vendor for execution on a machine. As described in Cooper, each time the machine Id is generated, a random number generator is used during the generation process (See e.g., Cooper, FIG. 12). Accordingly, the machine Id for the same machine will necessarily be different each time the machine Id is generated as the machine Id is generated using a random number generator. In view of the above, ***the machine Id cannot be equivalent to the claimed microprocessor identity as the machine changes overtime and does not uniquely identify the microprocessor***.

'497 File History, Response, August 22, 2008, at p. 6-7. A Notice of Allowance issued only as a result of the applicant's representation that the claimed microprocessor identity "does not change." *Id*. Thus, the unequivocal and repeated representations that the microprocessor identity does not change once assigned compels adoption of Apple's proposed construction. *See, e.g.*, *Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc*., 103 F.3d 1571, 1578 (Fed. Cir. 1997) ("arguments [] made to secure allowance of a claim, especially those distinguishing prior art, will presumably give rise to prosecution history estoppel").

IV. CONCLUSION

For the foregoing reasons, Apple respectfully requests that this Court adopt Apple's proposed constructions.

Dated: November 5, 2021

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record are being served with a copy of the foregoing document via the Court's CM/ECF system on November 5, 2021.

/s/ J. Stephen Ravel
J. Stephen Ravel

APPENDIX A

Claim Term	Claim Term With "Means" In Place Of "An Algorithm" Or "Algorithm" (As Recited In The Specification)
"the digital identity data is bound to the microprocessor identity by encrypting the digital identity data using ***an algorithm*** that uses the microprocessor identity" ('497 patent, claim 1)	"the digital identity data is bound to the microprocessor identity by encrypting the digital identity data using ***means*** that uses the microprocessor identity"
"the digital identity data is bound to the microprocessor identity device by encoding, using the microprocessor, the digital identity data using ***an algorithm*** that uses the microprocessor identity information" ('008 patent, claim 1)	"the digital identity data is bound to the microprocessor identity device by encoding, using the microprocessor, the digital identity data using ***means*** that uses the microprocessor identity information"
"the digital identity data is bound to the microprocessor identity device using an encryption ***algorithm*** and the microprocessor identity information" ('895 patent, claim 5)	"the digital identity data is bound to the microprocessor identity device using an encryption ***means*** and the microprocessor identity information"
"the digital identity data is bound to the microprocessor by encrypting, using the microprocessor, the digital identity data using ***an algorithm*** that uses the microprocessor identity information" ('948 patent, claim 1)	"the digital identity data is bound to the microprocessor by encrypting, using the microprocessor, the digital identity data using ***means*** that uses the microprocessor identity information"